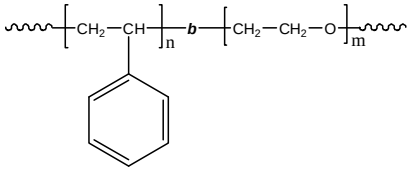
Sample Name: Poly(styrene-b-ethylene oxide)

Sample #: P18780-SEO

Structure:



Composition:

Mn x 10^3	PDI
10.0-b-19.5	1.10

Synthesis Procedure:

Poly(styrene-b-ethylene oxide) diblock copolymer is prepared by living anionic polymerization.

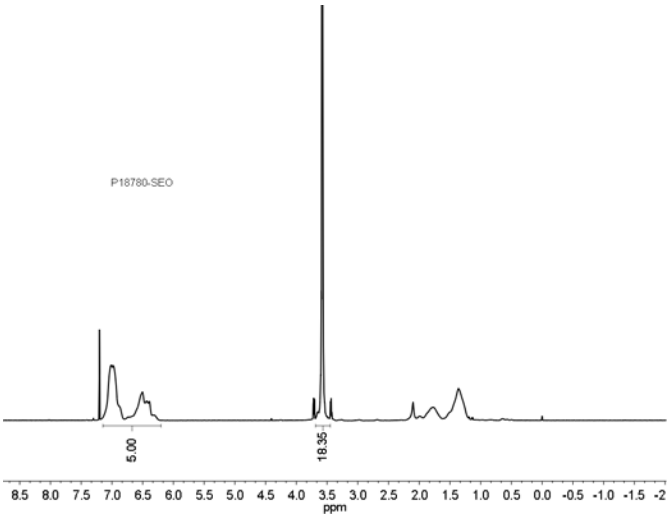
Characterization:

The molecular weight and polydispersity index (PDI) of the block copolymer are characterized by size exclusion chromatography (SEC). The composition of the block copolymer was calculated from ^{1}H-NMR by comparing the peak area of the phenyl polystyrene protons between 6.4 to 7.2 ppm and the ethylene oxide protons at 3.65 ppm.

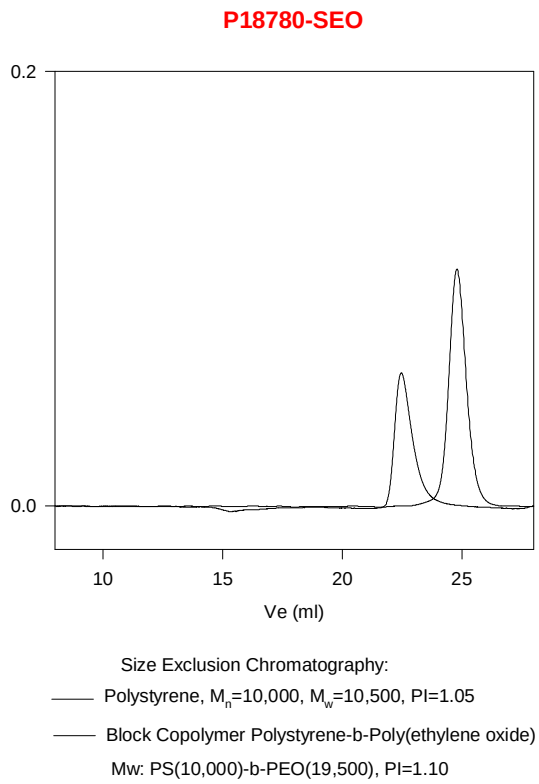
Solubility:

The polymer is soluble in THF (at 35 °C), $CHCl_3$, benzene, toluene, dioxane. Low molecular weight SEO with high contents of the polyethylene oxide block can also be solubilized in methanol and water.

^{1}H NMR spectrum of the sample



SEC profile of the block copolymer



Thermal analysis results

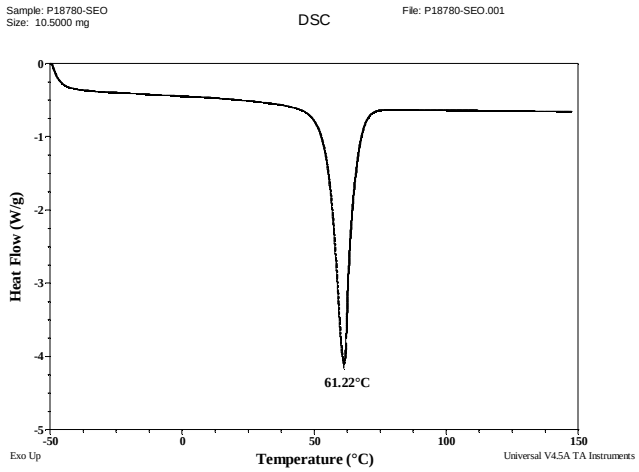
Thermal analysis was done on a TA Q100 differential scanning calorimeter at a heating rate of 20°C/min.The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

The melting temperature (T_m) was taken as a maximum of the endothermic peak.

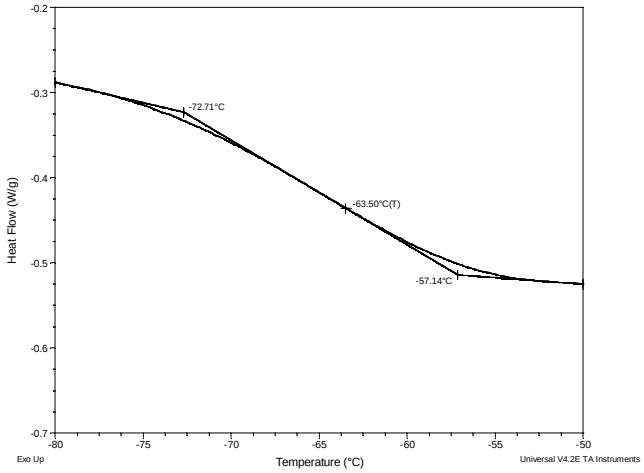
For PS block T_g: 85°C	
For PEO block	
T_g: -63°C	T_m: 61°C

DSC curves are presented on the next page.

DSC of P18780-SEO: Tm curve for PEO block:



Tg curve for PEO block:



Tg curve for PS block: